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Economic and Social Commission for Western Asia (ESCWA)

Report

Regional Policy Workshop on the Water-Energy Nexus
Amman, Jordan, 30-31 October 2016

Summary

The Regional Policy Workshop on the Water-Energy Nexus was convened by the United Nations Economic and Social Commission for Western Asia (ESCWA) in Amman, Jordan from 30 to 31 October 2016 to strengthen the capacity of ESCWA Member Countries to pursue the integrated and sustainable management of water and energy resources. The workshop was conducted within the framework of the United Nations Development Account project on Developing the Capacity of ESCWA Member Countries to Address the Water and Energy Nexus for Achieving Sustainable Development Goals.

The objectives of the workshop were to build understanding of the water and energy nexus as a conceptual framework for advancing sustainable development, and to discuss the benefits, opportunities and challenges of adopting a nexus approach for strengthening integrated natural resource management within the context of the institutional and policy frameworks existing in the Arab region. In doing so, the workshop provided training on the policy tools and options for promoting integrated strategies, plans and policies on the water-energy nexus and exchanged information on regional initiatives, projects and partnerships supporting Arab countries on the water, energy and food nexus.

The workshop was based on a policy toolkit comprised of seven modules that focus on themes identified by the ESWCWA Committee on Water Resources and ESCWA Energy Committee for examination during previous consultations on the water and energy nexus. The toolkit focuses on knowledge and awareness, policy coherence, the water-energy security nexus, resource efficiency, technology choices, renewable energy, as well as climate change and natural disasters. The workshop sessions also explored regional and national nexus initiatives in the Arab region. The last session of the workshop focused on modalities for securing ESCWA support for the conduct of demand-driven pilot projects that exemplify the water-energy nexus at the country-level.

The workshop addressed issues from a water-energy nexus perspective such as policy coherence, climate change challenges, efficiency opportunities, technology options as well as renewable energy. The workshop sessions also explored the water-energy nexus from a security perspective and provided an overview on some examples related to regional and national level nexus initiatives in the Arab region. The last session of the workshop focused on ESCWA engagement in supporting demand driven water-energy nexus opportunities in ESCWA member countries.

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CONTENTS

INTRODUCTION

1. The United Nations Economic and Social Commission for Western Asia (ESCWA) is implementing the United Nations Development Account (UNDA) project on Developing the Capacity of ESCWA Member Countries to Address the Water and Energy Nexus for Achieving Sustainable Development Goals. The first Regional Policy Workshop on the Water-Energy Nexus organized within the framework of this project was convened from 30 to 31 October 2016 in Amman, Jordan. A second policy workshop will be convened at the end of 2017 following the completion of country-level pilot projects. Three technical workshops will also be convened during 2017 at the operational level.

2. This first policy workshop aimed to strengthen the capacity of senior officials in ESCWA member States to pursue the integrated and sustainable management of water and energy resources in the Arab Region in support of efforts to achieve sustainable development goals. The workshop set forth the following objectives:

- Present and discuss the water-energy nexus policy toolkit's seven modules;
- Build an understanding of the overall scope of the water and energy nexus as a conceptual framework for advancing sustainable development;
- Discuss the benefits, opportunities and challenges of adopting a nexus approach for strengthening integrated natural resource management within the context of institutional and policy frameworks existing in the Arab region;
- Provide training on the policy tools and options for promoting integrated strategies, plans and policies on the water-energy nexus; and
- Exchange information on regional initiatives, projects and partnerships supporting Arab countries on the water, energy and food nexus.

3. Furthermore, participants to the workshop were invited to identify a possible policy tool or instrument that can be applied to support the mainstreaming water-energy nexus considerations at the country-level. Interested ESCWA member States were advised on how to prepare proposals for piloting or testing a policy tool or instrument in their respective countries with their water and energy counterparts at the national level. ESCWA advised that three proposals would be accepted upon review of the proposals by ESCWA. Accepted proposals would receive technical support and advisory assistance from ESCWA to assist in piloting the tool or instrument at the national level. Lessons learned from these three pilot projects would then be presented at the second policy workshop towards the end of 2017.

II. MAIN TOPICS OF DISCUSSIONS

4. Presentations and discussions are summarized in the following sections and are organized in accordance with the meeting agenda.

A. Overview of the Water and Energy Nexus

5. The first session introduced the water-energy nexus policy toolkit and provided an overview of the first module, entitled "Knowledge and Awareness Raising." The session emphasized that a nexus approach aims to reduce trade-offs and build synergies in view of encouraging integrated management across traditionally competing sectors. Guidelines for increasing awareness and capacity on the nexus were introduced along with regional initiatives and strategies for operationalizing the nexus. The importance of dialogue and conflict resolution among stakeholders were stressed as means for pursuing the effective management of the nexus. A nexus approach to the Sustainable Development Goals (SDGs) put forth in the 2030 Agenda for Sustainable Development. ESCWA also presented its programme of work aimed at supporting Arab States to strengthen their capacity to address the water, energy and food nexus.

6. The role of parliamentarians in advancing the water-energy nexus was examined by a member of the Tunisian parliament. The presentation stressed the well-established role of parliamentarians in controlling and overseeing the allocation and use of national resource endowments in Tunisia and hence their potential role in advancing a nexus approach to support the sustainable management of primary natural resources. The current challenges faced by Syria and the suitability of applying a nexus approach were addressed by the Syrian member of the ESCWA Committee on Energy.

7. The following presentation shared the experience of the Jordanian government in pursuing an integrated approach in sustainable development planning for advancing sustainable development at the national level. It was noted that the King Abdullah II Award for Excellence, which is granted annually for innovative initiatives in both the private and public sectors, now includes sustainability criteria in is selection process.

8. Ensuing discussions highlighted opportunities for pursuing a nexus approach in the implementation of action plans. ESCWA also shared that it has incorporated nexus concepts in its strategy and plan of action for implementing the 2030 Agenda on Sustainable Development.

B. Policy Coherence as a Nexus Tool

9. This session reviewed the policy toolkit module on "Increasing Policy Coherence". The session clarified that the main elements of an effective policy coherence framework should seek to balance competing demands across the water and energy sectors. This can be bolstered by capacity building for integrated and coherent policymaking as well the establishment of platforms to foster dialogue among stakeholders groups, which can eventually lead to the development of a nexus community of practice. It was explained that a functional policy coherence framework is dependent upon a governance structure that supports interaction across sectors. Two models for governing nexus interactions were explored, namely systems based on a shared governance among various units or systems that establish a high-level unit with management or oversight functions across all units.

10. Two ESCWA member States subsequently shared their experience in managing the water and energy sectors under one ministry. A representative from the Ministry of Energy and Water of Lebanon shared that difficulties are faced even when the water and energy sectors are managed under the same ministry due to legislative and institutional constraints. It was noted that legislative and institutional reforms would be instrumental in supporting the participation of the private sector in water and energy nexus projects.

11. The experience of the Ministry of Electricity and Water in Kuwait emphasized the importance of integrating the water and electricity generation functions within the same ministry since it allowed for better management of water-energy sectors tradeoffs based on the evolving national demand for primary resources. Desalination was highlighted as an important water-energy nexus pillar in Kuwait, with cogeneration as a main example of this.

12. In subsequent discussions, participants deliberated on the need for further capacity building to facilitate coordination and collaboration across the energy and water sectors in Arab States. Participants noted that interactions seeking integration across sectors need to accommodate not only the competing resource constraints, but also competing interests among the institutional stakeholder groups involved, such as water service providers, electricity operators and resource managers.

13. An interactive exercise was then conducted that asked participants to identify what type governance structure would be most appropriate for application in their national circumstances, namely one promoting shared governance among various units or one that establishes a high-level unit with oversight functions over all units. The participants then presented their views with a brief justification for their selection. This exercise emphasised the importance of considering regional and national specificities when seeking to institutionalize a nexus approach.

C. Climate Change Challenges on the water and Energy Nexus

14. The session opened with a presentation by ESCWA on the United Nations-League of Arab States Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR). The purpose was to demonstrate how science and assessment tools can be used to inform policymaking, including decisions related to the water and energy sectors, on technical issues that require a common understanding of climate change impacts and vulnerabilities.

15. The module on "Addressing Climate Change and Natural Disasters" was then introduced and reviewed the effects of climate change and natural disasters in the Arab region. Adaptation strategies were proposed to address these impacts. Focus was placed means to for increasing resilience, upgrading technological tools, and reducing disaster risks through development and preparedness.

16. The ensuing discussion highlighted national responses and challenges. Iraq uses agricultural runoff for injection into oil wells to increase productivity, and there are plans to use treated wastewater for irrigation of green zones. Egypt has a climate change adaptation plan in place that takes into account ways to prepare for the effects of more intense storms. The representative from the Palestinian Water Authority stressed that the ultimate goal of any nexus approach must be to ensure better service delivery for consumers and lower water and energy production costs, and that this can be achieved by prioritizing the use of technologies for developing nonconventional resources, such as treated wastewater reuse and desalination in the case of the water sector.

D. Efficiency Opportunities in the water and Energy Nexus

17. The module on "Increasing Efficiency" was then presented, which advocates for the development of a new vision of efficiency that integrates issues of scale, human rights and access to primary resources (water, energy and food). It was also clarified that possible synergies within the water–energy-food nexus present a valuable potential for improving resource use efficiency.

18. A presentation by the National Energy Research Center in Jordan explained that Jordan has initiated steps to diversify the national energy mix by enhancing the contribution of national and renewable energy sources. This ambitious energy diversification strategy has encouraged the Government to put in place the necessary legal and policy frameworks to encourage private sector investments in the sector and support the monitoring of efficiency.

19. The ensuing discussions focused on national experiences in advancing synergies in the water, energy and food sectors. Regional examples that were shared included the use of brackish water in the cooling stages of the oil extraction process, and investments in solar energy technologies for water pumping and desalination. Conservation as a cost effective measure was stressed along with the need for awareness raising and political will to change consumption patterns.

E. Technology Options for the water-Energy Nexus

20. The session reviewed the module on informing technological choices and highlighted the elements used to evaluate the sustainability and suitability of the various available technology options. The factors identified the need to take into account primary resources as well as the economic and financial requirements, environmental impacts, availability of human capacities needed, technical feasibility and social outlook of applying the proposed technology. The presentation demonstrated the application of these factors in the case of a number of current and potential technologies available for adoption in the water and energy sectors.

21. This was followed by a presentation by the ESCWA Technology Center (ETC) on the science, technology and innovation initiative for the water-energy-food nexus. The action plan and the corresponding implementation phases of the initiative were presented in details.

22. Participants deliberated on the reasons behind the deficiency in scientific research and technological advancements in the Arab region despite their importance to address regional development challenges. The reasons were attributed to a lack of a strategic vision as reflected by the limited share of budget allocations to research and technology as compared to other parts of the world. In that respect, technology scorecards introduced in this session have an important role in supporting decision makers and the private sector when considering investments in the technology field.

23. The session concluded with an exercise on the application of the technology scorecard for the selection of the most appropriate water desalination technology from two alternatives: Reverse osmosis versus the multi-stage flash desalination processes. The evaluation was performed based on allocating weights to the resource, human capacity and technical requirements as well as environmental and socio-cultural impacts of the technologies under study. The application of the exercise provided an example on how to use the technological scorecard tool to evaluate and compare among possible alternative technologies available based on national and regional contexts.

F. Renewable energy and the Nexus

24. The session was opened with a presentation by ESCWA on renewable energy applications in the Arab region. which focused on the potential of Arab countries to engage in the generation of renewable energy solutions. The presentation listed the challenges facing the development of renewables with a proposed list of determinants for the development of policy measures in support of such technologies.

25. This was followed by a review of the policy toolkit module on “Promoting Renewable Energy”. The presentation outlined a proposed framework to assess the readiness for the application of renewable energy solutions. These were followed by case studies on the application of renewables mainly micro-hydropower generation in Lebanon and solar desalination in Qatar.

26. Participants deliberated on the sustainability of renewable energy options and it was highlighted that in the long-run, renewable energy generation would be preferable to conventional fossil fuel electricity generation. However, it was noted that the interconnectedness of the electricity grid is a precondition for the viability and sustainability of renewable electricity generation megaprojects being pursued across the region. The representative from Electricity of Lebanon explained the prerequisites and challenges for successful renewable energy integration in Lebanon, which includes investing in an upgraded grid to absorb the instability of renewable energy on the network and especially with the target that Lebanon has set for 2020 of achieving 12 per cent renewable energy in its energy mix.

G. Exploring the Water- Energy Nexus from a security perspective

27. The session opened with a review of the module on “Examining the Water-Energy Security Nexus, which highlighted the key criteria that should be incorporated into decision support systems and the uses of nexus analytical tools to support decision-making. The experience of Qatar in applying the water-energy-food Nexus Tool 2.0 in the context of the country’s food security program was elaborated. This was followed by a presentation by the West Asia-North Africa Institute (WANA Institute) in Jordan on a study they are conducting with Oxford University on achieving water and food security in Jordan based on evidence and the potential for decoupling the agricultural sector from increasing national water demand.

28. An intervention bu the Ministry of Water Resources in Iraq summarizing the challenges affecting the management and development of the national water resources. A listing of potential water sector reform measures was also shared.

H. Regional and country level Nexus Initiatives

29. The session opened with a presentation by the League of Arab States on the Arab Water-Energy-Food Nexus Initiative, which has been endorsed by the Arab Ministerial Water Council and the Arab Council of Ministers of Electricity. The initiative provides a framework for supporting efficient coordination and collaboration across national, regional and international agencies engaged in promoting a nexus approach. It was also emphasized that development banks are increasingly involved in the funding of nexus programmes, especially that many of these programmes have demonstrated their financial viability.

30. This was followed by a presentation by Deutsche Gesellschaft füInternationale Zusammenarbeit (GIZ) on the European-German initiative supporting a global nexus dialogue programme. The presentation shared progress related to the establishment of the Regional Nexus Dialogue Programme, which aims to support different region examine and pursue efforts related to the water, energy and food nexus. The main pillars of the initiative focus on knowledge exchange, human capacity development and the development of a global nexus resource platform to facilitate exchange between scientists and practitioners. The Initiative also aims to support countries in developing regions to in the preparation of studies and implementation of pilot projects.

31. A presentation by Samra Wastewater Plant O&M Company explained that the As-Samra Wastewater Plant is using innovative technologies to treat wastewater and produce energy from biogas and micro-hydropower. The project is the first private-public partnership project implemented in Jordan that is conceptually and operationally focused on the nexus. The initiative has resulted in a decreased water tariff for the Jordanian Government along with an estimated reduction of 300,000 tons of CO_2 emissions per year, which contributes to the achievement of Jordan's climate change mitigation targets.

32. The representative from the Syrian Ministry of Electricity then shared the development challenges currently facing the water and energy sectors in Syria, and explained the trade-offs that exist when seeking to pursue the integrated management of the water and energy sectors in the Syrian context. The intervention concluded with a set of recommended measures to address these challenges.

33. An intervention by the representative from the Directorate of Water Resources Assessment in Oman shared how the national strategic direction of the country aims to overcome the growing gaps between water and energy needs and supply through the use of renewable energy sources. The presentation explained that the government is exploring means for the efficient use of solar power for water resource development and electricity generation.

I. Pursuing the Nexus in the ESCWA Region

34. This session focused on modalities available to member States to securing ESCWA support for demand-driven pilot projects on the water–energy nexus at the national level. ESCWA explained that it looks forward to receiving joint project proposals from ministries responsible for water and energy from ESCWA members States over the coming two months, in view of selecting up to three pilot projects for implementation in 2017. Support for these projects would be provided through technical support and advisory services. The participants were encouraged to submit their project ideas knowing that the proposals would be evaluated based on their ability to integrate a policy tool or approach that support an integrated application across both the water and the energy sectors. It was further explained that the experiences and lessons learned during pilot project implementation would be presented at the second regional policy workshop to foster further knowledge exchange and the application of the water-energy nexus approach in the region.

J. Closing session

35. The workshop closed with remarks provide by Ms. Carol Chouchani Cherfane, Chief of the Water Resources Section in the Sustainable Development Policies Division, on behalf of ESCWA. The participants were encouraged to submit their proposals for pilot projects in the water–energy nexus field

and to consult with their colleagues in the water and energy sectors to support the preparation of joint proposals. She also reiterated the engagement and commitment of ESCWA to advance work on the water-energy nexus and water-energy-food nexus in the Arab region.

III. ORGANIZATION OF WORK

A. VENUE AND DATE

36. The Regional Policy Workshop on the Water-Energy Nexus was organized from 30 to 31 October 2016 in Amman, Jordan.

B. OPENING

37. The meeting was formally opened by Ms. Carol Chouchani Cherfane, Chief of the Water Resources Section, Sustainable Development Policies Division, ESCWA and Ms. Radia Sedaoui, Chief of the Energy Section, Sustainable Development Policies Division, ESCWA.

C. PARTICIPANTS

38. The workshop was attended by 36 participants and gathered members of the ESCWA Committee on Energy and the ESCWA Committee on Water Resources or their delegated representatives. Stakeholders representing water and energy ministries as well as representatives from specialized Arab and international organizations also contributed to the deliberations and enriched discussion and exchange of ideas.

D. AGENDA

39. Presentations and discussions were made over eleven sessions. The agenda of the meeting is summarized below:

a) Opening statements
b) Overview of the Water and Energy Nexus
c) Policy Coherence as a Nexus Tool
d) Climate change challenges on the water and Energy Nexus
e) Efficiency Opportunities in the Water and Energy Nexus
f) Technology Options for the water-Energy Nexus
g) Renewable Energy and the Nexus
h) Exploring the Water-Energy Nexus from a security Perspective
i) Regional and Country Level Nexus Initiatives
j) Pursuing the Nexus in the ESCWA Region
k) Closing session

E. EVALUATION

40. An evaluation questionnaire was distributed to participants to assess the relevance, effectiveness and impact of the meeting. The feedback received was positive with all participants rating the overall quality of the meeting as good to very good. The majority of the participants found that the meeting achieved its objectives and all agreed that their expectations were met.

41. The organization of the meeting was found to be very good. Participants also considered their expertise well suited for the meeting. Approximately 95 per cent of the submitted questionnaires indicated that the meeting represented a good to very good forum for exchange of information and provided an important opportunity to share experiences with other experts and establish new useful contacts in the field. Written materials distributed by ESCWA and the presentations delivered during

the meeting by contributing experts were deemed to be of good quality by the totality of the participants. The majority of the participants (62 per cent) thought that the meeting length was appropriate, whereas almost a quarter indicated that more time was needed. All participants unanimously indicated that they would like to be involved in follow-up activities on the water-energy-food security nexus.

42. In addition, some participants suggested that such workshops should include a greater number of case studies from countries in the region that illustrate applications and regional experience in applying water-energy nexus initiatives.

ANNEX

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Note:

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- COE signifies Member of the ESCWA Committee on Energy
- Representative is indicated if the participant is representing the Committee member.

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